A.O.SMITH

BURNHAM GENESIS

HOT WATER SUPPLY BOILERS
MODELS GW/GWO-1000 THRU GW/GWO-2500

FEATURES

84% THERMAL EFFICIENCY – The absolute highest thermal efficiency possible by a non-condensing boiler is achieved by the new Genesis Boiler.

Low NOx –Precise amounts of gas and air are premixed through special Pre-Jet Orifices and forced through stainless steel burners that provide complete and clean combustion. Meets or exceeds California SCAQMD air quality standards.

EXCLUSIVE DIA-SCAN II W/STAGED FIRING – The Dia -Scan II is a complete microprocessor based boiler control. Every electrical boiler function; from starting the pump, to stage firing the main burner, to cycling the pump off at the end of a heating cycle; is controlled and monitored by the onboard computer. A comprehensive display panel includes LEDs that indicate current operating and fault status. A digital LED displays temperature set points, outlet temperature, current inlet/outlet differential (ΔT), tank temperature, and additional numerical fault codes. Precise temperature management is plus or minus 1°. In addition, the Dia-Scan II provides true self-diagnostic capabilities, eliminates guesswork, and reveals exactly where the problem is. Troubleshooting has never been easier.

STAGED FIRING – All second family Genesis boilers are staged fired. The boiler automatically adjusts its firing rate and btu output to maintain precise system temperature control. Each stage is user programmable; allows the boiler to be tailored to the installation and adjusted for optimum boiler performance and overall system efficiency. Models GW-1000 thru GW-1500 have three stages; Models GW-1850 thru GW-2500 have four stages.

HEAT EXCHANGER

HEAVY-DUTY CAST HEADERS – Choose from heavy non-ferrous all bronze headers or heavy cast iron Cora-Shield Coated headers. Genesis boiler headers are split bolted designs that allow complete and easy inspection of all internal header water surfaces and easy inspection of the copper tubes.

HIGH EFFICIENCY HIGH HEAT TRANSFER – A.O. Smith's distinctive double row integral finned copper heat exchanger provides maximum heat transfer and utilizes a self-baffling staggered tube design, that assures 84% thermal efficiency.

INTEGRAL REAR HEADER BOILER MOUNTED PUMP – Factory sized and integrally rear header mounted, pre-wired bronze fitted pump is standard. Dia-Scan II controlled pump time delay allows the removal of useable residual heat from the combustion chamber during the stand-by cycle. Practically eliminates stand-by heat loss.

FACTORY TESTED – Each Genesis boiler is water and fire tested before leaving the factory

UNMATCHED VENTING FLEXIBILITY – Multiple venting options; choose from several conventional or direct venting options. Multiple openings options; choose from exhaust outlet leaving the top of boiler or exhaust outlet-leaving the rear of boiler.

STACKABLE SPACE SAVING DESIGN – Up to 5 million btu's in the space of a 2.5 million btu boiler.

OTHER FEATURES

ASME Pressure Relief Valve 125# • Mounted Flow Switch • Remote Tanks Temperature Sensor • Alternate Thermostat Terminals (24V) • Manual Reset High Limit • Blocked Flue Switch • Fan Proving Switch • Adjustable Pump Delay.

Meets: SCAQMD Rule 1146.2

ASME CRN

H

SA CERTIFIED

DESIGN SA CERTIFIED

FM APPROVED

OPTIONS

Code Options: CSD-1, California Code, IRI, New York, and Illinois School Code.

- Alarm Bell
- Outdoor Models
- Stack Rack
- Low Water Cut Off
- Extended Power Venting Kits
- Dry Contacts For Any Boiler Failure
- Direct and Sidewall Vent Terminal Kits
- Cupro-Nickel Tubes
- Hard Water Pump (inline)
- Sequencing Control Panel (2-8 Boilers)

LIMITED WARRANTY OUTLINE

If the heat exchanger should fail within 5 years, under the terms of the warranty, A.O. Smith will furnish a replacement part; installation, labor, handling and local delivery extra. **THIS OUTLINE IS NOT A WARRANTY.** For complete information, consult the written warranty or A.O. Smith Water Products Company.

Warranty does not apply to product installed outside of the United States of America or its territorial possessions and Canada.

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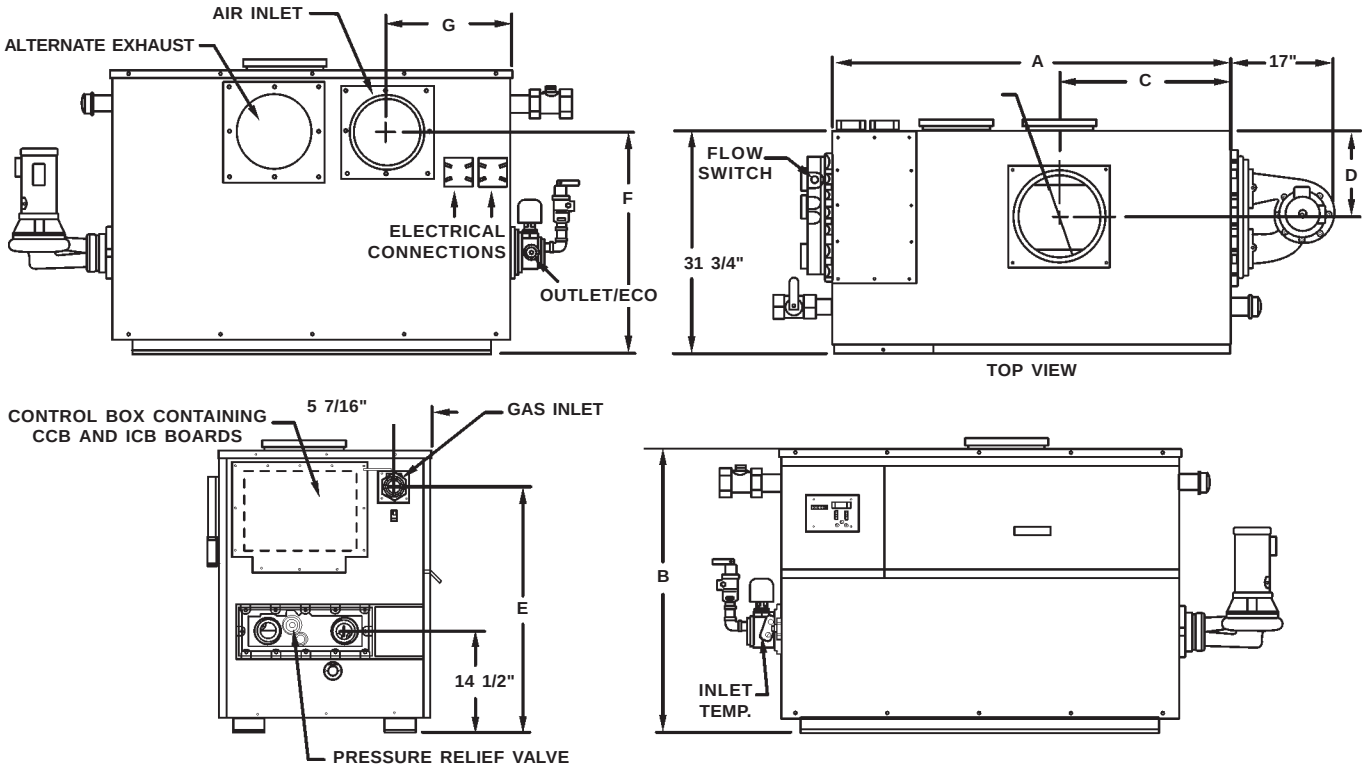

Model	All Dimensions in Inches											
	Water Connections	Gas Connections	Vent	Inlet Air	A Width WO/Pump	B Height	C	D	E	F	G	Width W/Pump
GW-1000	2 1/2	2	10	8	47	40 1/2	14	12 1/2	36 1/4	31 3/4	20 3/4	64
GW-1300	2 1/2	2	12	10	57 1/2	40 1/2	24 3/4	12 1/2	36 1/4	31 3/4	16 1/2	74 1/2
GW-1500	2 1/2	2	12	10	64 1/2	40 1/2	30	12 1/2	36 1/4	31 3/4	18	81 1/2
GW-1850	2 1/2	2 1/2	14	12	78 3/4	43 1/4	27 3/4	11 1/2	35 1/4	32 1/2	34 1/4	95 3/4
GW-2100	2 1/2	2 1/2	14	12	85 1/2	43 1/4	31	11 1/2	35 1/4	32 1/2	33 1/2	102 1/2
GW-2500	2 1/2	2 1/2	16	14	99 1/2	43 1/4	38	11 1/2	35 1/4	32 1/2	36 1/4	116 1/2

Maximum gas supply pressure is 13.8" W.C. for both Natural and Propane Gas.
The minimum supply gas pressure is 7" W.C. for Natural Gas.
The minimum supply gas pressure for Propane is 11.0" W.C.
Requires: 120V, 60 Hz, 30 Amps.

HOT WATER SUPPLY BOILER RECOVERY CAPACITIES												
			Temperature Rise -Degrees F. Gallons Per Hour									
Model	Input Rating BTU/Hr. Natural & Propane (LP) Gas		40	50	60	70	60	90	100	110	120	130
GW-1000	990,000	GPH	2520	2016	1680	1440	1260	1120	1008	918	840	775
GW-1300	1,300,000	GPH	3309	2847	2208	1891	1655	1471	1324	1203	1103	1018
GW-1500	1,500,000	GPH	3818	3055	2545	2182	1909	1697	1527	1388	1273	1175
GW-1850	1,850,000	GPH	4709	3767	3139	2691	2355	2093	1884	1712	1570	1449
GW-2100	2,100,000	GPH	5345	4276	3564	3055	2673	2376	2138	1944	1782	1645
GW-2500	2,490,000	GPH	6338	5071	4225	3622	3169	2817	2535	2305	2113	1950

Genesis BTU Input/Output And Flow Rates														
	BTU Input/Output		Boiler Rate of Flow and Pressure Drop											
	Input Rating BTU/Hr.	Output Rating BTU/Hr.	20 Deg. F Rise		30 Deg. F Rise		40 Deg. F Rise		Maximum Flow Rate			Minimum Flow Rate		
Model	Natural & Propane (LP) Gas	Natural & Propane (LP) Gas	GPM	PD-Ft. Head	GPM	PD-Ft. Head	GPM	PD-Ft. Head	GPM	PD-Ft. Head	Deg.F Rise	GPM	PD-Ft. Head	Deg.F Rise
GW-1000	990,000	831,600	83	5.1	55	2.7	42	1.5	154	12.2	11	42	1.5	40
GW-1300	1,300,000	1,092,000	109	72	73	4.2	55	3.2	154	14.5	14	55	3.2	40
GW-1500	1,500,000	1,260,000	126	10.1	84	8.3	83	4.3	154	16.3	17	64	4.3	40
GW-1850	1,650,000	1,554,000	154	19	104	10.1	78	6.4	154	16.5	20	78	6.4	40
GW-2100	2,100,000	1,764,000	N/A	N/A	116	14.5	68	8.3	154	21.3	23	89	8.3	40
GW-2500	2,490,000	2,091,600	N/A	N/A	139	16.5	105	11.6	154	23.2	26	106	11.6	40

Note: Flow rates and pressure drops shown above are through the boiler only and include no field piping. The field piping must also be considered when sizing system pumps.

Note: The standard factory supplied internal rear header mounted pump is sized for the boiler and up to additional 50 equivalent feet of field piping.

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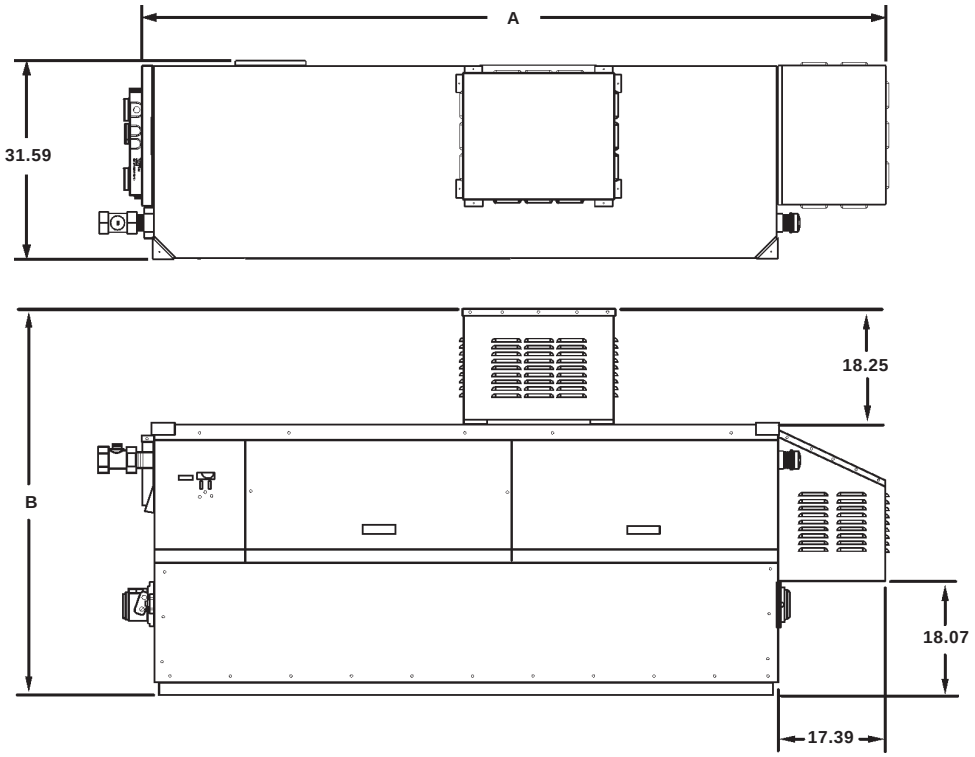
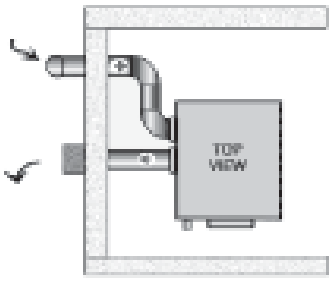
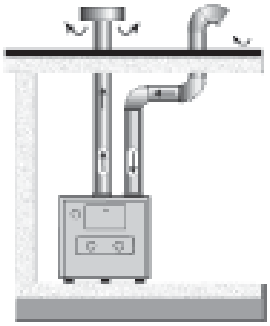
OUTDOOR MODELS



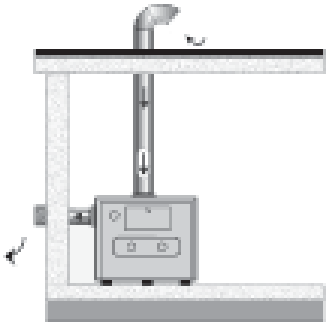
MODEL	DIM. "A"	DIM. "B"
GWO-1000	66.00	58.67
GWO-1300	76.50	58.67
GWO-1500	83.50	58.67
GWO-1850	97.50	61.37
GWO-2100	104.50	61.37
GWO-2500	118.50	61.37



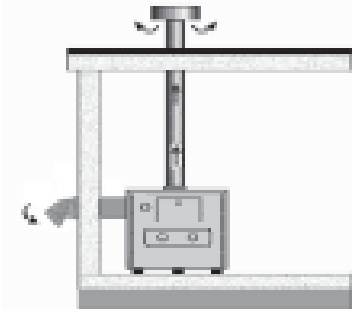
DIRECT VENT (HORIZONTAL)



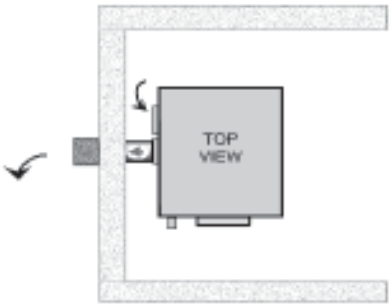
DIRECT VENT (VERTICAL)



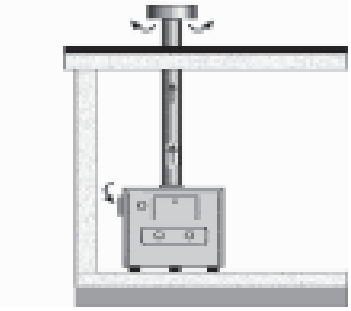
DIRECT VENT (HORIZONTAL)



DIRECT VENT (VERTICAL)



SIDEWALL VENTING



NATURAL DRAFT

Model	Vent Size	Combustion Air Intake	Natural Draft Max. Distance W/O Barometric Damper / With Barometric Damper	Sidewall Venting*	Sidewall Venting W/Opt. Extended Vent Kit (Power Assisted)	Direct Vent*	Direct Vent W/Opt. Extended Vent Kit (Power Assisted)
GW-1000	10'	8'	35' / To Roof	70'	110'	35' / 35'	60' / 60'
GW-1300	12'	10'	35' / To Roof	70'	110'	35' / 35'	60' / 60'
GW-1500	12'	10'	35' / To Roof	70'	110'	35' / 35'	60' / 60'
GW-1850	14'	12'	35' / To Roof	35'	110'	15' / 15'	60' / 60'
GW-2100	14'	12'	35' / To Roof	35'	110'	15' / 15'	60' / 60'
GW-2500	16'	14'	35' / To Roof	35'	110'	15' / 15'	60' / 60'

See installation manual for additional venting information further details.

Notes: * Maximum three elbows

** Maximum two elbows -each- Intake/Exhaust

90/45 degree elbows are equivalent to 10/5 feet of vent pipe respectively.

All venting configurations terminating horizontially are Category III and require AL29-4C venting material.

All venting configurations terminating vertically are Category I and can use type B venting material (Except where local codes require AL29-4C sealed venting material.)

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SUGGESTED SPECIFICATIONS

The hot water supply boiler(s) shall be an A.O. Smith Genesis Model GW _____ having an input rating of _____ BTU/hr, and an output rating of _____ Btu/hr when fired with (Natural/Propane) _____ gas. The boiler shall bear the ASME "H" stamp and shall be National Board registered (CRN in Canada) for 160 PSI working pressure. The boiler(s) shall be equipped with a factory installed 125 PSIG ASME Pressure Relief Valve.

The boiler(s) shall be design tested and certified to the ANSI Z21.13 standard and approved by the American and Canadian Gas Associations with a listed thermal efficiency of 84%.

The boiler's copper fin tube heat exchanger shall be a horizontal, double row, two pass, 15-tube design. The lower first pass with 8 solid copper tubes, shall have integral extruded copper fins spaced at "5" fins per inch, the upper second pass with 7 solid copper tubes shall have "7" extruded copper fins per inch. The tubes shall be rolled into heavy (all Bronze "Standard" /or Cast Iron CoraShield lined "optional") _____headers. The ASME approved bolted split headers must have a removable faceplate that allows full access and inspection of the tubes and internal header surfaces. Non-removable one-piece headers, with small inspection plugs, shall not be acceptable.

The heat exchanger shall bear a 5-year manufacturer's limited warranty against failure. The heat exchanger shall be immune to thermal shock.

The Boiler(s) shall be provided with the factory sized, integrally rear header mounted, pre-wired, bronze fitted, factory installed pump. The pump shall be controlled by the boiler's Dia-Scan II control and include an adjustable time delay, that allows the removal of useable residual heat from the combustion chamber and cools the boiler to an equal system temperature during the stand-by cycle.

The combustion chamber shall be fully lined with lightweight, high temperature ceramic fiber insulation, rated to 2,300°F (1260°C). The jacket panels shall be powder coated with a baked-on finish, which is suitable for outdoor service. The jacket shall be of tight construction, and weather and water-resistant.

The boiler shall employ a fan induced premixed multi-burner system firing into a pressurized combustion chamber. The "4509" stainless steel/titanium alloy burners shall be fired using Pre-Jet gas orifices that provide precise gas to air mixture for clean combustion and low NOx operation. The pre-Jet gas orifices shall be self-adjusting for altitude, from sea level to 6,000 feet (1,830m). The boiler(s) shall be capable of meeting or exceeding the current national, state, and local air quality regulations for low NOx.

All electrical boiler functions shall be controlled, operated, and monitored by a Dia-Scan II microprocessor-based control. The Dia-Scan II control shall provide (three "GW-1000 thru GW-1500"/four "GW-1850 thru GW-2500) _____ stage operation. Each stage shall be adjustable by the operator to allow the boiler to be adjusted to suit the application and maximize system/boiler efficiency and operation. The microprocessor shall control the boiler temperature and be accurate to within plus or minus 1°F. The hot surface ignition system shall employ a separate flame sensor for each stage to provide maximum safety. The microprocessor-based boiler control shall be tested to ANSI standards and approved by both UL and AGA/CSA.

The boiler shall be supplied with a remote tank thermistor for sensing and controlling the storage tank temperature up to 1,000 feet (300m) away by the Dia-Scan II boiler control. Alternate 24V contacts shall also be provided to allow the boiler to be controlled by energy management systems and/or multi-boiler controllers.

The microprocessor-based control shall be self-diagnostic and provide 25 LED's that indicate current operating and fault status. In addition to the LED's, a digital LED enunciator shall provide numerical read outs of inlet/outlet, inlet/outlet differential, set point and set point differential temperatures; along with additional numerical failure codes.

Factory mounted and wired flow, blower prover, and blocked flue switches shall be provided. The gas train shall meet or exceed the requirements of ANSI Z21. 13 and include gas pressure regulator, manual gas cock, redundant safety gas valve, operating control valve, and plugged pressure test tapings.

The boiler(s) shall be AGA/CSA approved for direct horizontal through the wall venting, or direct vertical venting; in addition to conventional sidewall or conventional vertical venting. The boiler(s) must be field convertible from top mounted venting to rear mounted venting.

For maximum floor space optimization, the boiler(s) will have the option of being stacked directly one above the other using a factory designed Stack-Rack as provided by the manufacturer. Boilers with top only vent outlets that cannot be stacked directly one above the other are not acceptable.

A.O. Smith Water Products Co., Inc. On Line
www.hotwater.com

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A. O. Smith
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